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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/808,242	03/24/2004	Sebastian Sommer	22882	5015
535 7590 09/18/2008 K.F. ROSS P.C. 5683 RIVERDALE AVENUE SUITE 203 BOX 900 BRONX, NY 10471-0900			EXAMINER MAKI, STEVEN D	
			ART UNIT 1791	PAPER NUMBER
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**Please find below and/or attached an Office communication concerning this application or proceeding.**

The time period for reply, if any, is set in the attached communication.

<b>Office Action Summary</b>	<b>Application No.</b>	<b>Applicant(s)</b>	
	10/808,242	SOMMER ET AL.	
	<b>Examiner</b>	<b>Art Unit</b>	
	Steven D. Maki	1791	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

#### Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

#### Status

- 1) ☒ Responsive to communication(s) filed on 05 December 2007 and 22 January 2008.
- 2a) ☐ This action is **FINAL**.                      2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

#### Disposition of Claims

- 4) ☒ Claim(s) 18-34 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 18-34 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

#### Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on \_\_\_\_\_ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

#### Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All    b) ☐ Some \*    c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
  2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
  3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

#### Attachment(s)

- |  |   |
|--|---|
| 1) <input type="checkbox"/> Notice of References Cited (PTO-892)                     | 4) <input type="checkbox"/> Interview Summary (PTO-413)           |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | Paper No(s)/Mail Date. _____                                      |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08)          | 5) <input type="checkbox"/> Notice of Informal Patent Application |
| Paper No(s)/Mail Date _____  | 6) <input type="checkbox"/> Other: _____                          |

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1) A request for continued examination under 37 CFR 1.114, including the fee set forth in 37 CFR 1.17(e), was filed in this application after final rejection. Since this application is eligible for continued examination under 37 CFR 1.114, and the fee set forth in 37 CFR 1.17(e) has been timely paid, the finality of the previous Office action has been withdrawn pursuant to 37 CFR 1.114. Applicant's submission filed on 12-5-07 and 1-22-08 has been entered.

2) The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

3) Claims 18-34 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

Claims 18, 32, 33 and 34 recite "prebonding the nonwoven spunbond filament layer to a tensile strength of at least 50% of the tensile strength thereof at maximum bonding as defined in DIN 53815 to form a prebonded nonwoven spunbond filament layer" (emphasis added). One of ordinary skill in the art is not reasonably apprised of the scope of protection afforded by this language. The above noted subject matter describes:

<b>tensile strength prebonded nonwoven spunbond filament layer</b>	$\geq$	50%	<b>tensile strength nonwoven spunbond filament layer at maximum bonding</b>
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In order to calculate the claimed tensile strength of a prebonded nonwoven spunbond filament layer (and thereby reveal the scope of the claim), it is *critical* to know *which method* is used to obtain a nonwoven spunbond filament layer at maximum bonding.

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Without knowing *which method* is used, one cannot discern whether a prebonded nonwoven spunbond filament layer was produced using the claimed process. With respect to 35 USC 112 second paragraph, claims are insolubly ambiguous, and hence indefinite, if one of ordinary skill in the art does not know which sample preparation method to use in a claim requiring measurement of a property. Honeywell International Inc. v. International Trade Commission 68 USPQ2d 1023 (Fed. Cir. 2003). In this application, the property of tensile strength is measured according to DIN 53815. However, the claims are indefinite because one of ordinary skill in the art does not know *which method* is used to obtain a nonwoven spunbond filament layer at maximum bonding. It is unclear if the nonwoven spunbond filament layer at maximum bonding is obtained using the same or different conditions than that used for prebonding. It is unclear if the nonwoven spunbond filament layer at maximum bonding is obtained using fusion bonding with a smooth calender roll, fusion bonding with a hot embossing roll, solvent bonding, bonding with separate adhesive or mechanical bonding. It is unclear if maximum bonding corresponds to (a) filaments being bonded together over the largest possible bond area, (b) the filaments being bonded together at virtually all crossings, (c) the highest tensile strength obtained by varying only temperature and/or pressure of a specified bonding process, or (d) something else. With respect to "nonwoven spunbond filament layer at maximum bonding", the original disclosure teaches the following: The nonwoven spunbond filament layer is initially bonded with at least one a calender roll. Contact pressure and/or surface temperature of the at least one calender roll is varied until the highest possible tensile strength is obtained. Maximum bonding is the amount

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of bonding necessary to obtain this highest possible tensile strength. See page 4 lines 20-27 of specification. However, claims 18, 32, 33 and 34 do not appear to be limited to obtaining a nonwoven spunbond filament layer at maximum bonding using the procedure described at page 4 lines 20-27 of the original disclosure. For example, claims 18, 32, 33 and 34 do not require fusion bonding. Another example, claims 18, 32, 33 and 34 do not require use of a calender roll. One of ordinary skill in the art would readily appreciate that different bonding methods produce bonded nonwoven spunbond filament layers having different highest tensile strengths. For example, one of ordinary skill in the art would readily expect the highest tensile strength of a nonwoven spunbond filament layer fusion point bonded with a total bond area of 1% area using a calender having at least one heated embossing drum to be greatly different than the highest tensile strength of a nonwoven spunbond filament layer fusion point bonded with a total bond area of 25% with a calender having at least one heated embossing drum. Another example, one of ordinary skill in the art would readily expect the highest tensile strength of a nonwoven spunbond filament layer fusion bonded over a 100% bond area using a smooth heated calender roll to be greatly different than the highest tensile strength of a nonwoven spunbond filament layer adhesively bonded at every filament intersection with sprayed on epoxy adhesive. Absent additional guidance as to interpretation of "nonwoven spunbond filament layer at maximum bonding", one of ordinary skill in the art is not informed of the scope of the claims.

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In claims 32 and 34, the scope and meaning of "maximum free path length" is unclear. In particular, it is unclear if "maximum free path length" has the same meaning as "maximum free filament length". If not, why not?

4) Applicant is advised that should claims 26 and 27 be found allowable, claims 32 and 33 will be objected to under 37 CFR 1.75 as being a substantial duplicate thereof. When two claims in an application are duplicates or else are so close in content that they both cover the same thing, despite a slight difference in wording, it is proper after allowing one claim to object to the other as being a substantial duplicate of the allowed claim. See MPEP § 706.03(k).

Claim 32 has the same scope as claim 26.

Claim 33 has the same scope as claim 27.

5) The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless --

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

(e) the invention was described in (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent or (2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effects for purposes of this subsection of an application filed in the United States only if the international application designated the United States and was published under Article 21(2) of such treaty in the English language.

6) The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

Anderson et al

7) **Claims 18-23, 26-29 and 31-34 are rejected under 35 U.S.C. 102(e) as being anticipated by Anderson et al (US 7,022,201), which at col. 13 lines 59-63 expressly incorporates US 3,485,706 to Evans by reference in its entirety for all purposes.**

Anderson et al discloses making a wiper for absorbing oil and grease comprising providing a nonwoven web 20; stretching (necking) the nonwoven web 20 using S-roll arrangement 26 comprising rollers 28, 30; forming a cellulosic fibrous layer 18; applying the cellulosic fibrous layer 18 to the nonwoven web 20; "hydrodynamically bonding" the cellulosic fibrous layer 18 to the nonwoven web 20 using a hydraulic entangling manifold 34 to form a composite fabric 36. See col. 1 lines 1-9, figure 3, col. 13 lines 16-67, col. 14 lines 1-47. The stretching (necking) enhances softness and conformability. See col. 9 lines 6-16. After stretching (necking) and before entangling, the nonwoven web may be creped ("deformed") to increase softness and bulk. See col. 10 lines 32-67, col. 11 lines 1-19. Anderson et al teaches that the nonwoven web may be a spunbond web. See col. 3 lines 14-20, col. 5 lines 23-42. col. 7 lines 34-35. Anderson et al teaches thermal point bonding the nonwoven web (spunbond web) in a pattern using a heated calender roll and an anvil roll. The total bond area is less than about 30% (e.g. from about 2% to about 30%). The bond density is greater than 100 bonds per square inch. In the H&P pattern for example, the total bond area is 30% and the bond density is 200 bonds / square inch (31 bonds/cm<sup>2</sup>). See col. 4 lines 49-67, col. 5 lines 1-22, col. 8 lines 17-57. The point bonding imparts integrity, improves durability

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and improves strength of the nonwoven web. See col. 5 lines 19-22, col. 8 lines 19-21. In Example 1, the spunbond web is point bonded before it is stretched (necked). See col. 15 lines 38-67, col. 16 lines 1-5. During hydraulic entangling, the fibers of the cellulosic fiber layer 18 are driven "partially through" the nonwoven web 20. See col. 14 lines 21-25. The composite fabric has a "continuous filament rich side". See col. 13 lines 9-15. In figure 3, the cellulosic fiber layer 18 is formed by wet laying technique. In particular, a fibrous slurry is deposited from a paper making headbox 12 onto a forming fabric 16. As an alternative to superimposing a wet laid cellulosic fiber layer 18 on the nonwoven web 20, Anderson et al teaches superimposing a dried cellulosic fibrous sheet on the nonwoven web, rehydrating the dried sheet to a specified consistency and then subjecting the rehydrated sheet to a hydraulic entangling. See col. 13 lines 50-54. Anderson et al also specifically teaches that "... the cellulosic fibrous layer 18 may be an air-laid or dry laid layer" (col. 13 lines 57-58, emphasis added). Anderson et al teaches:

Hydraulic entangling may be accomplished utilizing conventional hydraulic entangling equipment such as described in, for example, in U.S. Pat. No. 3,485,706 to Evans, which is incorporated herein in its entirety by reference thereto for all purposes.

See col. 13 lines 59-63, emphasis added. In US 3,485,706, Evans discloses providing an initial fibrous layer, which may be made by any desired technique such as carding, random laydown, air deposition, slurry deposition, etc (col. 12 lines 4-25). Evans discloses entangling the fibers of the initial fibrous layer using water jets (figure 1, figure 2, figure 40, figure 41, col. 11 lines 46-62, col. 18 lines 34-75, col. 19 lines 1-47, col. 20 lines 44-75, col. 21 lines 1-75, col. 22 lines 1-53). Furthermore, Evans discloses first



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treating the initial fibrous layer with a "wetting agent or other surface agent" to increase ease of processing (col. 16 lines 23-42, especially col. 16 lines 39-42 and example 8).

The claimed method is anticipated by Anderson et al's method.

With respect to step (d) in claim 18, the composite fabric (finished product) in Anderson is a "two-layer laminate" as claimed since Anderson et al teaches hydro entangling the cellulosic fibers of the cellulosic fiber layer 18 with the fibers of the point bonded spunbond web 20 such that the cellulosic fibers are driven "partially through" the fibers of the nonwoven web (col. 14 lines 21-25) and the composite fabric has a "continuous filament rich side" (col. 13 line 13). A "two-layer laminate" is formed because the preliminary thermal bonding of the nonwoven web together with the use of hydroentangling to only partially drive the cellulosic fibers through the fibers of the nonwoven web prevents complete intimate mixing of all of the fibers of both layers.

With respect to step (b) in claim 18, the claimed tensile strength of the prebonded nonwoven spunbond filament layer is inherent in Anderson et al's point bonded spunbond. In view of the broad recitation of "maximum bonding" and Anderson's specific teachings to improve integrity, durability and strength by using the specified total bond area and bond density, it is reasonable to conclude that Anderson's prebonded spunbonded web has the claimed tensile strength. For example: In claim 18, "nonwoven spunbond filament layer ... at maximum bonding" reads on --a nonwoven spunbond filament layer having a total bond area of about 5%--. In claim 18, "prebonded nonwoven spun bond filament layer" reads on --a nonwoven spunbond filament layer having a total bond area of about 30%-- because a "a nonwoven

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spunbond filament layer having a total bond area of about 30%" necessarily has a tensile strength of at least 50% of "a nonwoven spunbond filament layer having a total bond area of about 5%". With respect to "prebonded nonwoven spun bond filament layer" reading on --a nonwoven spunbond filament layer having a total bond area of about 30%--, Anderson et al teaches that the point bonded nonwoven spunbond web may have a total bond area of about 30%.

With respect to step (b') in claim 18, Anderson et al's incorporation of Evans in its entirety by reference for all purposes at col. 13 lines 59-63 and Evans's disclosure to applying a wetting agent to an initial fibrous layer to increase ease of processing at col. 16 lines 23-42 and example 8, constitutes disclosure of treating the nonwoven web 20 with a "wetting agent".

As to claims 19 and 20 (calender and heated embossing drum respectively), Anderson et al teaches point bonding using a heated calender roll and anvil roll.

As to claims 21, 26, 32 and 34, (maximum free length between two bonding points being less than 15 mm), Anderson et al teaches point bonding the nonwoven spunbond web 20 with about 30% total bond area and 200 bonds / square inch (31 bonds/cm<sup>2</sup>).

As to claims 22, 27, 33 and 34 (additionally deform prebonded spunbond to increase thickness), Anderson et al teaches creping the point bonded spunbond web to increase bulk.

As to claims 23 and 29, Anderson et al teaches that that the cellulosic fibrous sheet may be an air laid layer, which one of ordinary skill in the art would readily understand is formed using an "air lay machine".

As to claim 28, Evans, which is incorporated in its entirety by reference for all purposes by Anderson et al, teaches using fatty alcohol sulfate (surface active agent) as the wetting agent (example 8, col. 28 lines 66-68). In example 8, a dilute aqueous solution of wetting agent (fatty alcohol sulfate) is first applied to a web of randomly disposed continuous filaments to wet it. The continuous filament web is then passed under water jets to form a strong, durable stable, nonwoven fabric useful for many industrial applications.

As to claim 31, Anderson et al teaches hydraulically entangling using water jets (col. 13 lines 63-64, col. 14 lines 16-17).

**8) Claims 24, 25 and 30 are rejected under 35 U.S.C. 103(a) as being unpatentable over Anderson et al (US 7,022,201) in view of Skoog et al (US 6,177,370) and Bouchette (US 6,110,848).**

As to claims 24, 25 and 30, it would have been obvious to one of ordinary skill in the art to apply a second spunbond web to Anderson et al's cellulosic fiber layer 18 since Skoog et al (figure 4) and Bouchette (Figures 5-8, col. 7 lines 23-26) suggest sandwiching a cellulosic fiber layer between two spunbond layers before hydroentangling the layers to form a wipe. One of ordinary skill in the art would have found the use of a second spunbond nonwoven web applicable to Anderson et al's process in view of the substantial similarity of the processing equipment shown in figure

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3 of Anderson et al and Figure 4 of Skoog et al. One of ordinary skill in the art would have been motivated to use a second spunbond nonwoven web in Anderson et al's process since Bouchette teaches by using a second long fiber layer such as spunbond layer, loss of cellulosic fiber and plugging of a carrier wire during entangling with wet jets is prevented.

Skoog et al

9) **Claims 18-21, 26, 28 and 30-32 are rejected under 35 U.S.C. 103(a) as being unpatentable over Skoog et al (US 6,177,370) in view of Evans (US 3,485,706).**

Skoog et al discloses a process for making a hydraulically entangled nonwoven COMPOSITE FABRIC having at least three layers for use as an absorbent wiper comprising providing a lower **synthetic fiber structure zone (spunbond layer) 226**; providing a **cellulosic fiber layer 218**; providing an upper **synthetic fiber structure zone (spunbond layer) 224**; sandwiching the cellulosic fiber layer between the spunbond layers; "hydrodynamically bonding" the layers using water jets from manifolds 236(a)-(c)., and drying the hydroentangled fabric 240 using a drying apparatus 242 to form a composite fabric 252. The cellulosic fiber layer 218 may comprise wood pulp fibers. The spunbond layers 224, 226 (continuous filament nonwoven substrates) are provided from rolls 228, 230 respectively. See figure 4. As an alternative to providing the spunbond layers from rolls 228, 230, the spunbond layers may be formed by a spunbond process and passed directly through the apparatus of figure 4 without first being stored on rolls. See col. 7 lines 28-35. The COMPOSITE FABRIC may have only three layers. In particular, the three layer COMPOSITE FABRIC 10 for use as a wiper

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comprises synthetic fiber structure first zone 20 (spunbond web), short fiber third zone 60 (wood pulp), and synthetic fiber structure second zone 40 (spunbond web). See figure 2. The spunbond webs provide strength, durability and abrasion resistance to the composite fabric. The wood pulp (cellulosic material) provides absorbency and softness to the composite fabric. See col. 4 lines 44-67, col. 5 lines 1-20, col. 6 lines 25-32.

Skoog et al teaches prebonding the synthetic fiber structure zones (spunbond webs) before hydroentangling to improve abrasion resistance and permit rigorous high pressure hydroentangling between the various zones. See col. 3 lines 38-40, col. 7 lines 58-66, col. 10 lines 64-67, col. 11 lines 1-6, col. 15 lines 15-17. Skoog et al teaches prebonding the spunbond web such that it has a total bond area of less than about 30% (e.g. about 2% to about 30%) and a uniform bond density of greater than about 155000 bonds per square meter (about 387000 to about 775000 bonds per square meter). See col. 7 lines 58-67, col. 6 lines 1-4. Skoog et al teaches prebonding the spunbond web using a thermal pin bonding roll and a smooth anvil roll. See col. 8 lines 6-44. Figure 9 illustrates an example bond pattern. The bond pattern shown in figure 9 has a pin density of about 474000 pins per square meter ( $47.4 \text{ pins/cm}^2$ ) wherein each pin is a square pin having a side length of 0.00064 meter (0.64 mm). This bond pattern produces a total bond surface area of about 15.7 percent. See col. 8 lines 16-22. With respect to hydroentangling, Skoog et al teaches: "Hydroentangling processes are known in the art, and as an example, U.S. Pat. No. 3,485,706, to Evans discloses a suitable hydroentangling process, which is hereby incorporated by reference." (col. 9 lines 42-45, emphasis added).

With respect to step (d) in claim 18, the composite fabric in Skoog et al comprises a "two-layer laminate" as claimed. See Figure 2. It is noted that claim 18 is not limited to a two layer laminate. The fiber laminate made by claim 18 reads on two or more layers.

With respect to step (b) in claim 18, Skoog et al's prebonded spunbonded web has the claimed tensile strength. In view of the broad recitation of "maximum bonding" and Skoog et al's specific teachings to provide strength, durability and abrasion resistance using the specified total bond area and bond density, it is reasonable to conclude that Skoog et al's prebonded spunbonded web has the claimed tensile strength. For example: In claim 18, "nonwoven spunbond filament layer ... at maximum bonding" reads on --a nonwoven spunbond filament layer having a total bond area of about 5%--. In claim 18, "prebonded nonwoven spun bond filament layer" reads on --a nonwoven spunbond filament layer having a total bond area of about 15.7%-- because a "a nonwoven spunbond filament layer having a total bond area of about 15.7%" necessarily has a tensile strength of at least 50% of "a nonwoven spunbond filament layer having a total bond area of about 5%". With respect to "prebonded nonwoven spun bond filament layer" reading on --a nonwoven spunbond filament layer having a total bond area of about 15.7%--, Skoog et al teaches that the point bonded nonwoven spunbond web may have a total bond area of about 15.7%. In any event: it would have been obvious to one of ordinary skill in the art to prebond the spunbond layers in Skoog et al's process such that the tensile strength of the prebonded spunbond layer is *at least 50% of the tensile strength* thereof at maximum bonding as defined in DIN 53815 since

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(1) Skoog et al teaches prebonding the spunbond layer (continuous filament layer) such that the total bond area of the prebonded spunbond layer is less than 30 percent and a uniform bond density of the prebonded spunbond layer is greater than 155000 bonds per square meter (col. 7 line 58 to col. 8 line 3) and (2) Skoog et al teaches that the high strength of the synthetic fiber structure zones (spunbond layers) produced by prebonding prior to hydroentangling improves abrasion resistance and permits rigorous pressure hydroentangling (col. 11 lines 1-4).

With respect to step (b') in claim 18, it would have been obvious to one of ordinary skill in the art to apply a wetting agent to Skoog et al's point bonded spunbond continuous filament web prior to hydroentangling using water jets from the manifold 236 since (1) Skoog et al expressly incorporates Evans by reference (col. 9 lines 41-45) and (2) Evans, directed to hydroentangling nonwoven webs comprising fibers such as continuous filaments, suggests applying a wetting agent to the fibers of a nonwoven web prior to hydroentangling with water jets to increase the ease of processing (hydroentangling). See figures 1, 2, 40, 41 and 42, abstract, col. 5 lines 6-34, col. 11 lines 46-62, col. 12 lines 4-25, col. 16 lines 24-42, columns 18-22, examples 4, 5 and 8. Especially see col. 16 lines 39-42 and col. 28 lines 66-68 of example 8.

As to claims 19 and 20 (calender and heat embossing drum respectively), Skoog et al teaches prebonding the continuous filament layer with a pin bond pattern using thermal bond rolls comprising one roll with pins and a smooth anvil roller.

As to claims 21, 26 and 32, (maximum free length between two bonding points being less than 15 mm), Skoog et al teaches a uniform bond density of greater than

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about 155000 bonds per square meter ( $15.5 \text{ bonds/cm}^2$ ) such as about 387000 bonds per square meter ( $38.7 \text{ bonds/cm}^2$ ) to about 775000 bonds per square meter ( $77.5 \text{ bonds/cm}^2$ ). In the bond pattern shown in figure 9, the pin density is about 474000 pins per square meter ( $47.4 \text{ pins/cm}^2$ ) wherein each pin is a square pin having a side length of 0.00064 m (0.64 mm).

As to claim 28, Evans, which is incorporated in by reference by Skoog et al, teaches using fatty alcohol sulfate (surface active agent) as the wetting agent (example 8, col. 28 lines 66-68). In example 8, a dilute aqueous solution of wetting agent (fatty alcohol sulfate) is first applied to a web of randomly disposed continuous filaments to wet it. The continuous filament web is then passed under water jets to form a strong, durable stable, nonwoven fabric useful for many industrial applications.

As to claim 30 (apply second spunbonded), Skoog et al teaches using a second spunbond web. See figures 4, 5 and 6.

As to claim 31, Skoog et al produces water jets from manifolds 236(a)-(c).

10) **Claims 22, 27, 33 and 34 are rejected under 35 U.S.C. 103(a) as being unpatentable over Skoog et al (US 6,177,370) in view of Evans (US 3,485,706) as applied above and further in view of Anderson et al (US 7,022,201), Sabee (US 4,223,063) or Chhabra et al (US 2004/0137200).**

As to claims 22, 27, 33 and 34, it would have been obvious to one of ordinary skill in the art to deform and thereby increase the thickness of the point bonded spunbond webs before hydraulically entangling the prebonded spunbond webs with the cellulosic fiber layer in Skoog et al's process of making a composite fabric wiper since



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(1) Anderson et al, also directed to making a composite fabric wiper, teaches stretching (necking) and creping a point bonded spunbond to improve softness, conformability and bulk of the point bonded spunbond web before hydraulically entangling the point bonded spunbond web with a cellulosic fiber layer, (2) Sabee, suggests stretching and corrugating a nonwoven web (e.g. spunbond web) using rollers containing teeth to increase its bulk and form a rough finish, which is useful for wiping (col. 4 lines 54-68, col. 5 lines 1-68, col. 6 lines 1-25, col. 12 lines 42-68, col. 13 lines 1-4, col. 14 lines 45-58) or (3) Chhabra et al, directed to nonwoven wipes, suggests deforming a nonwoven such as spunbond to increase its thickness, which is a recognized desirable attribute of a wipe (paragraphs 5-6, 10-11, 38, 67-71).

**11) Claim 29 is rejected under 35 U.S.C. 103(a) as being unpatentable over Skoog et al (US 6,177,370) in view of Evans (US 3,485,706) as applied above and in view of Bouchette (US 6,110,848).**

As to claim 29, it would have been an obvious alternative to one of ordinary skill in the art to apply the cellulosic fiber layer on the lower prebonded spunbond filament web using an air laying device instead of a wet laying device since Bouchette, which like Skoog et al teaches hydroentangling an upper nonwoven web, a cellulosic fiber layer and a lower nonwoven web, discloses forming the cellulosic fiber layer using either a wet laying device (figures 1, 2) or a dry laying device (figures 7, 8) and teaches using a dry laying device to form the cellulosic fiber layer directly on the nonwoven web (figures 7, 8). Bouchette teaches forming the nonwoven web by a process such as spunbonding. See col. 7 lines 23-26, col. 10 lines 35-48.

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**12) Claims 23-25 are rejected under 35 U.S.C. 103(a) as being unpatentable over Skoog et al (US 6,177,370) in view of Evans (US 3,485,706) and in view of Anderson et al (US 7,022,201), Sabee (US 4,223,063) or Chhabra et al (US 2004/0137200) as applied above and further in view of Bouchette (US 6,110,848).**

As to claims 23-25, it would have been an obvious alternative to one of ordinary skill in the art to apply the cellulosic fiber layer on the lower prebonded spunbond filament web using an air laying device instead of a wet laying device since Bouchette, which like Skoog et al teaches hydroentangling an upper nonwoven web, a cellulosic fiber layer and a lower nonwoven web, discloses forming the cellulosic fiber layer using either a wet laying device (figures 1, 2) or a dry laying device (figures 7, 8) and teaches using a dry laying device to form the cellulosic fiber layer directly on the nonwoven web (figures 7, 8). Bouchette teaches forming the nonwoven web by a process such as spunbonding. See col. 7 lines 23-26, col. 10 lines 35-48.

#### Remarks

13) Applicant's arguments with respect to claims 18-34 have been considered but are moot in view of the new ground(s) of rejection.

Applicant's arguments filed 12-5-07 have been fully considered but they are not persuasive.

Applicant states that this application is concerned with "maximum tensile force work" (page 6 of RCE filed 12-5-07). Applicant is incorrect. The original disclosure fails to contain any teaching regarding "work" - "tensile strength" as recited in claims 18, 32,

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33, 34 and "work" as described in applicant's response filed 12-7-08 are different concepts.

Applicant states: "Measurement of the maximum tension and the graphic representation of it plotted against tension is determined as the integral of the curve without exceeding the maximum." (page 6, RCE filed 12-5-07). This statement is irrelevant because claim 18 is concerned with the subject matter of "tensile strength" whereas the area under the curve of tensile force versus length change represents "work". Also, applicant's description of a plot of maximum tension against tension is not understood. It is noted that DIN 53815 describes a plot of tensile force against length change, but fails to describe a plot of maximum tension against tension.

Applicant states: "Starting from this measured value during calendaring the pressure and/or temperature of the calender roller is set such that the tensile strength at maximum bonding is 50% of the maximum possible value." (pages 6, 7 of RCE filed 12-5-07). This statement is irrelevant because it has no foundation in either the claims nor the original disclosure. The original disclosure teaches varying only pressure and/or temperature during bonding of a spunbond web using calender rolls to determine the highest tensile strength for a spunbond web. The spunbond web having the highest possible tensile strength is defined by the original disclosure as being the spunbond web at maximum bonding. The original disclosure fails to disclose "the tensile strength at maximum bonding" is 50% of "the maximum possible value".

In the RCE filed 12-5-07, applicant states: "presuming maximum bonding, which means that the filaments forming the spunbond are fused together at virtually all

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crossings..." (page 7 of RCE filed 12-5-07). This statement is irrelevant because it has no foundation in either the claims nor the original disclosure. Indeed, the original specification's disclosure to point bond using the hot embossing calender teaches against obtaining maximum bonding by fusing the filaments together at virtually all crossings.

With respect to the prior art rejections, applicant argues that the prebonding step aims at a "relatively low maximum tensile strength". This argument is not commensurate in scope with the claims and is, therefore, not persuasive. None of the pending claims require a "relatively low maximum tensile strength" prebonded nonwoven spunbond filament layer. Claims 18, 32, 33 and 34 read on the tensile strength of the prebonded spunbond filament layer being greater than the tensile strength of the spunbond filament layer at maximum bonding.

14) No claim is allowed.

15) Any inquiry concerning this communication or earlier communications from the examiner should be directed to Steven D. Maki whose telephone number is (571) 272-1221. The examiner can normally be reached on Mon. - Fri. 8:30 AM - 5:00 PM.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Richard Crispino can be reached on (571) 272-1226. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

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/Steven D. Maki/  
Primary Examiner, Art Unit 1791

Steven D. Maki  
September 12, 2008